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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/034,181

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Owen John Williams Wynn

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02/22/2006

Iandiorio & Teska

260 Bear Hill Road

Waltham, MA 02451-1018

EXAMINER

THANGAVELU, KANDASAMY

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/034,181

Applicant(s)

WYNN, OWEN JOHN WILLIAMS

Examiner

Kandasamy Thangavelu

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-8 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date January 3, 2006.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Applicants' amendment mailed on December 27, 2005. Claims 1-8 of the application are pending. This office action is made final.

Information Disclosure Statement

2. Acknowledgment is made of the information disclosure statements filed on January 3, 2006 together with copies of the patents and papers. The patents and papers have been considered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Turner et al.** (U.S. Patent 6,437,759) in view of **Larlham et al.** (GB Patent 984,816 submitted by the Applicant as part of the IDS on January 3, 2006), and further in view of **Covannon et al.** (U.S. Patent 6,543,899).

5.1 **Turner et al.** teaches vehicle simulator having head-up display. Specifically, as per claim 1, **Turner et al.** teaches a vehicle simulator (Abstract, L1-3; CL1, L7-8); comprising:

(iv) a head position and orientation system mounted on the head or the headwear of the operator (Abstract, L3-6; CL1, L7-8);

(v) a simulator host computer that receives information from controls of the vehicle and sends information to the controls and to instruments of the vehicle when the vehicle is in a simulation mode (CL3, L51-56);

(vi) an image generator computer (Abstract, L6-8; Fig. 4), that receives data from the simulator host computer regarding the vehicle's simulated position and orientation (CL1, L13-16; CL3, L51-56; CL1, L20-21); and that also receives data from the head position and orientation sensing system regarding the operator's head position and orientation (Abstract, L8-10; CL2, L63-65; CL4, L59-63); and that sends a computed image to the image projector (Abstract, L6-8, Fig. 4).

Turner et al. does not expressly teach (i) a real-world vehicle whose controls and instruments are dual-mode such that they can be switched between normal operation and simulated operation. **Larlham et al.** teaches (i) a real-world vehicle whose controls and instruments are dual-mode such that they can be switched between normal operation and simulated operation (Page 1, CL1, L9-16 and L24-30; Page 2, CL2, L91-102; Page 3, CL2, L108-114). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the vehicle simulator of **Turner et al.** with the vehicle simulator of **Larlham et al.** that included (i) a real-world vehicle whose controls and instruments were dual-mode such that they could be switched between normal operation and simulated operation because that would allow the visual display apparatus to be readily and realistically operated from a real vehicle, for example the motor car owned by the individual trainee rather than from a simulated car body (Page 1, CL1, L24-30); controlling the display apparatus to be derived directly from the movements of the vehicle controls made by the trainee (Page 1, CL2, L53-57); and allow the driver trainee to familiarize himself with car controls and obtain practice in manipulation and coordination under realistic conditions of simulated road handling of the controls of the actual car he was to drive before ever he took the vehicle on the road (Page 3, CL2, L108-114).

Turner et al. does not expressly teach (ii) a retro-reflecting screen which is deployed around and outside windows of a control area of the vehicle, which control area is for a person operating the simulator; and (iii) an image projector for being mounted on a head or headwear of the operator. **Covannon et al.** teaches (ii) a retro-reflecting screen which is deployed around and outside windows of a control area of the vehicle, which control area is for a person operating the

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simulator (CL1, L6-8; CL2, L23-24); and (iii) an image projector for being mounted on a head or headwear of the operator (CL1, L8-9; CL2, L23-24; Fig. 8; CL7, L67 to CL8, L16). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the vehicle simulator of **Turner et al.** with the vehicle simulator of **Covannon et al.** that included (ii) a retro-reflecting screen which was deployed around and outside windows of a control area of the vehicle, which control area was for a person operating the simulator; and (iii) an image projector for being mounted on a head or headwear of the operator, because the head mounted projection system would eliminate the shortcomings of encumbrance, lack of brightness, weight and fragility (CL2, L25-27); and the retro-reflective screen would use reflection rather than diffraction, allowing the screen to function properly with multicolor and full color images (CL2, L33-36).

5.2 As per claim 2, **Turner et al.**, **Larlham et al.** and **Covannon et al.** teach the vehicle simulator of claim 1. **Turner et al.** does not expressly teach that the real-world vehicle is a road vehicle, in which the operator is a driver, and in which the control area is a cab of the road vehicle. **Larlham et al.** teaches that the real-world vehicle is a road vehicle, in which the operator is a driver, and in which the control area is a cab of the road vehicle (Page 1, CL1, L9-16 and L24-30; Page 2, CL2, L91-102; Page 3, CL2, L108-114).

5.3 As per claim 3, **Turner et al.**, **Larlham et al.** and **Covannon et al.** teach the vehicle simulator of claim 1. **Turner et al.** teaches that the real-world vehicle is an aircraft, in which

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the operator is a pilot, and in which the control area is a cockpit of the aircraft (CL, L10; CL1, L16-18; CL1, L43).

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Turner et al.** (U.S. Patent 6,437,759) in view of **Larlham et al.** (GB Patent 984,816), and **Covannon et al.** (U.S. Patent 6,543,899), and further in view of **Larussa** (U.S. Patent 6,163,408).

6.1 As per claim 5, **Turner et al.**, **Larlham et al.** and **Covannon et al.** teach the vehicle simulator of claim 1. **Turner et al.**, **Larlham et al.** and **Covannon et al.** do not expressly teach that the real-world vehicle is a ship or a boat, in which the operator is a pilot, and in which the control area is a bridge or cockpit of the ship or boat. **Larussa** teaches that the real-world vehicle is a ship or a boat, in which the operator is a pilot, and in which the control area is a bridge or cockpit of the ship or boat (CL10, L9-13). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the vehicle simulator of **Turner et al.**, **Larlham et al.** and **Covannon et al.** with the vehicle simulator of **Larussa** that included the real-world vehicle being a ship or a boat, in which the operator was a pilot, and in which the control area was a bridge or cockpit of the ship or boat because that would allow training operators of the ship and other sea vessels (CL1, L16-17).

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Turner et al.** (U.S. Patent 6,437,759) in view of **Larlham et al.** (GB Patent 984,816), and **Covannon et al.** (U.S. Patent 6,543,899), and further in view of **Streid** (U.S. Patent 6,196,845).

7.1 As per claim 6, **Turner et al.**, **Larlham et al.** and **Covannon et al.** teach the vehicle simulator of claim 1. **Turner et al.**, **Larlham et al.** and **Covannon et al.** do not expressly teach that the image projector has a small exit pupil such that its depth of field at various distances from the retro-reflecting screen is sufficient to prevent de-focus of the picture as the operator looks around. **Streid** teaches that the image projector has a small exit pupil such that its depth of field at various distances from the retro-reflecting screen is sufficient to prevent de-focus of the picture as the operator looks around (CL3, L58-61). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the vehicle simulator of **Turner et al.**, **Larlham et al.** and **Covannon et al.** with the vehicle simulator of **Streid** that included the image projector having a small exit pupil such that its depth of field at various distances from the retro-reflecting screen was sufficient to prevent de-focus of the picture as the operator looked around because that would allow viewing the imagery with a full depth focus (CL3, L60-61).

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Turner et al.** (U.S. Patent 6,437,759) in view of **Larlham et al.** (GB Patent 984,816), and **Covannon et al.** (U.S. Patent 6,543,899) and further in view of **Shaffer et al.** (U.S. Patent 6,050,690).

8.1 As per claim 7, **Turner et al.**, **Larlham et al.** and **Covannon et al.** teach the vehicle simulator of claim 1. **Turner et al.**, **Larlham et al.** and **Covannon et al.** do not expressly teach that the image projector includes an auto-focus mechanism for maintaining focus as the

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projection distance varies. **Shaffer et al.** teaches that the image projector includes an auto-focus mechanism for maintaining focus as the projection distance varies (CL3, L58-61). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the vehicle simulator of **Turner et al.**, **Larlham et al.** and **Covannon et al.** with the vehicle simulator of **Shaffer et al.** that included the image projector including an auto-focus mechanism for maintaining focus as the projection distance varied because that would allow the remote viewer to input control information and automatically focus a portion of the displayed image (CL1, L65-66; CL2, L6-7).

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Turner et al.** (U.S. Patent 6,437,759) in view of **Larlham et al.** (GB Patent 984,816), and **Covannon et al.** (U.S. Patent 6,543,899), and further in view of **Amery et al.** (U.S. Patent 6,152,739) and **Blackham** (U.S. Patent 6,735,015).

9.1 As per claim 8, **Turner et al.**, **Larlham et al.** and **Covannon et al.** teach the vehicle simulator of claim 1. **Turner et al.** teaches a small high-resolution projector (CL4, L1-2). **Turner et al.**, **Larlham et al.** and **Covannon et al.** do not expressly teach that the projector is a small high-resolution flat panel display projector. **Amery et al.** teaches that the projector is a small high-resolution flat panel display projector (CL2, L35-37; CL4, L57-58). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the vehicle simulator of **Turner et al.** with the vehicle simulator of **Amery et al.** that included the projector being a small high-resolution flat panel display projector because as per **Blackham** the

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flat panel LCD displays would be attractive because of their reduced system maintenance, versatile lens options and small physical size and weight for a given light output (CL3, L1-5).

Allowable Subject Matter

10. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

11. Applicant's arguments filed on December 27, 2005 have been fully considered. The arguments with respect to 103 (a) rejections are not persuasive.

11.1 As per the applicants' argument that "the Examiner states that Turner et al. discloses this feature (iii) of an Image projector for being mounted on a head or headwear of the operator... Turner et al discloses a vehicle simulator (i.e. an aircraft simulator) having a head-up display; Figure 4 of Turner et al. shows the type of head-up display being used; this head-up display is actually provided by a head-up display projector 42B, shown in Figure 4; this projector 42B for providing the head-up display is located behind a rear projection screen 48; The user 19 indicated in Figure 4 is on the opposing side of the rear projection screen 48; therefore Turner et al. does not disclose an image projector which is mounted on a head or headwear of the operator, as

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required by feature (iii) in the Applicant's claim 1", the examiner has used the **Covannon et al.** reference.

Covannon et al. teaches (iii) an image projector for being mounted on a head or headwear of the operator (CL1, L8-9; CL2, L23-24; Fig. 8; CL7, L67 to CL8, L16).

11.2 As per the applicants' argument that "for feature (1), the Examiner refers to Amery et al.; the Examiner says that Amery et al. discloses feature (i) because Amery et al allows providing input to the visual display system in simulation mode in response to the displayed video images; the operator can simulate the flight of an aircraft and can respond the environment as depicted by the visual display; the Applicant respectfully disagrees with the Examiner and respectfully submits that Amery et al. does not teach a real-world vehicle whose controls and instruments are dual-mode as required by the Applicants claim 1 feature (1); Amery et al. teach a conventional flight simulator including a control panel and a control stick and throttle for providing input to the visual display; Amery et al. goes on to say that the control panel and surrounding pilot environments are often realistic simulations of the controls and displays present in the actual aircraft; this clearly signifies that the simulator does not include a real-world vehicle which is dual-mode, but is in fact a realistic simulation of the controls and displays present In a real aircraft; the simulator disclosed by Amery et al. is therefore not a real-world vehicle but is in fact a simulated vehicle, that is a simulator constructed such that the controls and displays appear to the user to be identical to those which would be present in a like real-world vehicle; Amery et al does not teach a real-world vehicle whose controls and instruments are dual-mode; in the Applicant's invention, the real world

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vehicle may be, for example, a real aircraft, a real truck, or a real ship; all these real-world vehicles are fully functional real-world vehicles. In the Applicant's drawings, the real-world vehicle disclosed by way of example is an aircraft and this aircraft is an actual aircraft in which the pilot flies. In the case of a truck, the real-world vehicle would be an actual truck in which the driver drives; the Applicant's Figure 1 is stated in the Applicant's specification to show a front portion of a fully functional real-world aircraft in its hanger; the cockpit is an actual aircraft cockpit; therefore the controls and displays contained within the cockpit are the controls and displays by which the pilot will fly the actual aircraft; the dual-mode functionality of the Applicant's invention includes a first mode of operation by which the controls and displays are used conventionally as part of the real-world fully functional vehicle, and a second mode of operation which is a mode in which the controls and displays of the real-world fully functional vehicle are used to interact with the display system; in particular the video images which are provided when the real-world vehicle is in the second simulated or training mode; in this second mode of operation, the real-world vehicle does not operate as a fully-functional vehicle but instead operates as the interface with the simulated environment", the examiner has used the **Larlham et al.** reference provided in the IDS submitted by the applicant on January 3, 2006.

Larlham et al. teaches (i) a real-world vehicle whose controls and instruments are dual-mode such that they can be switched between normal operation and simulated operation (Page 1, CL1, L9-16 and L24-30; Page 2, CL2, L91-102; Page 3, CL2, L108-114).

11.3 As per the applicants' argument that "the Examiner rejects the Applicant's claim 2 over a combination of Turner et al, Amery et al, Covannon et al. and Huston et al.; apart from the above

mentioned missing features when Turner at al, Amery et al, and Covannon et al. are combined, it is respectfully submitted that the need to combine four patents together in order to reject a claim on obviousness is itself a clear indication that the claim is not only novel but is inventive”, the Examiner respectfully disagrees. The Examiner takes the position that the number of references used does not determine the novelty and non-obviousness of an invention; only the teachings of the references determine if the claimed invention is novel and non-obvious.

As per claim 2, **Larlham et al.** teaches that the real-world vehicle is a road vehicle, in which the operator is a driver, and in which the control area is a cab of the road vehicle (Page 1, CL1, L9-16 and L24-30; Page 2, CL2, L91-102; Page 3, CL2, L108-114).

11.4 As per the applicants’ argument that “the comments made above apply even more to the Examiner's rejection of claim 5; more specifically, the Examiner is combining no less than five patent specifications in order to support his argument of obviousness, namely Turner at al with Amery et al, Covannon at al., Larussa and Pollack; the combination of five USA patents in order to indicate that a claim is obvious must surely by any standard be regarded as a strong indication that the claim is not only novel but is inventive; claim 6 has been rejected over a combination of Turner et al, Amery at al., Covannon at a. and Streid; the deficiencies mentioned above in the combination of Turner at al, Amery at al and Covannon at al. are noted, as is the need to combine four patent specifications in order to support the Examiner's position; Claim 6 is believed to be clearly inventive; claim 7 has been rejected as being obvious over a combination of Turner at al, Amery et al. Covannon et al. and Shaffer at al. the Applicant relies for patentability of claim 7 on the fact

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that the Examiners combination of Turner at al., Amery at al. and Covannon at al. does not give the combination believed by the Examiner, and also on the fact that the need to combine no less than four patents together is a clear indication that the claim is inventive; the Examiner has rejected claim 8 over a combination of Turner et al, Amery at al., Covannon at al. and Blackham; again the Applicant relies for patentability of claim 8 on the fact that the combination of Turner at al., Amery at al. and Covannon at al. does not give the combination relied upon by the Examiner; the Applicant also relies upon the fact that the need to combine no less than four patents together is a clear indication that claim 8 contains Inventive subject matter”, the Examiner respectfully disagrees. The Examiner takes the position that the number of references used does not determine the novelty and non-obviousness of an invention; only the teachings of the references determine if the claimed invention is novel and non-obvious.

Conclusion

ACTION IS FINAL

12. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on January 3, 06 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Thangavelu
Art Unit 2123
February 15, 2006


Paul L. Rodriguez 2/17/06
Primary Examiner
Art Unit 2125